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AUTHOR Cullum, Charles
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ABSTRACT

A study developed an objective approach to measuring the effects of collaborative learning techniques, and assessed the impact of collaborative learning on reducing writing problems for developmental students. One-hundred two developmental English students participated in an experimental writing class that used only collaborative learning techniques. The study measured the effects of collaborative learning on sentence structure, word usage, verb form, and an overview of the writing samples through the category of problems detected. Results indicated that collaborative learning appears to have a greater impact in the areas of sentence length, the use of passive voice, the use of the verb "to be," and overall number of problems. There seems to be less impact in the areas of coordination and subordination, and the impact in the word usage areas is inconclusive. Results also demonstrated a need for better grammar-checking computer software for use in future objective-qualitative studies. Finally, findings suggest the validity of the conventional subjective attitude among developmental instructors that developmental students are not necessarily inferior in any intrinsic way, and appears to indicate that, overall, collaborative learning has a positive effect on the writing skills of developmental students. (Eleven tables of data are included.) (PRA)

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Charles Cullum
Arts and Letters Department
Lake Superior State University

Collaborative Learning, Phase Two: Experimental Research

Presented to the 1991 Conference on College
Composition and Communication
March 21, 1991

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Charles Cullum
Arts and Letters Department
Lake Superior State University

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In the Fall of 1990, I received a grant from my university to conduct an experimental, one-term long workshop for developmental writing students that used only collaborative learning techniques. That is, there was a peer tutor, but that tutor served more as a facilitator than as a tutor. She helped students to discuss a writing task with other students and to develop possible approaches to that task. It was then up to each individual student to choose from among those approaches. The tutor did not simply supply "correct" answers.

Once the workshop was under way, I received a second grant to assess what impact the workshop might have on these developmental students. This assessment could, I thought, provide a unique opportunity to look at collaborative learning in a different light. Specifically, collaborative learning has become a popular pedagogical tool in college writing courses. Most instructors agree that collaborative learning improves student writing and

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critical thinking. However, the evidence usually cited in support of this now conventional view is largely subjective and anecdotal. What is sorely needed, therefore, are objective approaches to measuring just what effects collaborative learning techniques actually have on student writers. This study, then, is an attempt to begin to move the assessment of collaborative learning on to a new stage of development--namely, objective-quantitative experimental research.

The research design was based on a value-added approach to assessing the impact of collaborative learning on reducing writing problems for developmental students. That is, the instructors had each developmental student write an in-class essay at the beginning of the ten-week term and then another in-class essay at the end of the term. The topic for each essay was the same for all students. These essays were then entered into WordPerfect 5.1 and run through the proofreader software program Grammatik IV. Grammatik IV works contextually to check for and, importantly for this study, to count possible errors in grammar, usage, punctuation, and mechanics, as well as spelling. In addition, Grammatik IV allows users to program new rules and count categories of their own devising.

In all, seven sections of developmental English were involved in this study. Students are placed into developmental English by scoring twenty-five or less percent on an objective placement test. Students themselves chose a particular section of the developmental course according to the needs of their overall

schedule and room in the section. The logistics of the workshop were that five sections of developmental English taught by three instructors used the workshop during the Fall, 1991 term. These three instructors could bring their entire class or classes to the workshop and/or send students on their own time. As it turned out, these three instructors differed in the frequency of use of the workshop according to their scheduling of assignments and their interest in having their students try collaborative learning. A fourth instructor was designated as the control, and so his two sections did not use the workshop or any other collaborative format at all. All developmental instructors shared a common departmental syllabus for the course. The study included a total of one hundred two developmental students, broken down by instructor as follows: Group A, taught by instructor D.P., was comprised of eighteen students from one section. They used the workshop four periods as a class, and many of these students came to the workshop on their own as well. Group B, taught by instructor G.G., was comprised of twenty-four students from two sections. Each section used the workshop two periods as a class, and some of these students came on their own, Group C, taught by instructor G.T., was comprised of twenty-four students from two sections. Each section used the workshop one period as a class, and none of these students came on their own, Group D, taught by instructor L.L., was the control group and was comprised of thirty-six students from two sections.

This study measured the effects of collaborative learning on

four writing characteristics that are particularly evident in developmental writers. Specifically, the study measured 1) sentence structure through the categories of the number of words per sentence (sentence length), the number of "long" sentences, the number of "short" sentences, coordinators, and subordinators; 2) word usage through the categories of slang, wordiness, redundancy, and cliches; 3) verb form through the categories of the use of the passive voice and the use of the verb "to be"; and 4) an overview of the writing samples through the category of problems detected.

First, then, is the category of sentence length. One characteristic in the writing of developmental students is the overuse of simple sentence constructions. In collaborative discussion, peer developmental writers and the peer facilitator attempt to eliminate this problem not by instruction in the basic syntactical units, but rather by talking about "choppiness" and "lack of detail." Sentence length, then, can be one measure of the effectiveness of collaborative learning techniques for developmental writers. The results in this category of the study were as follows. Group A's average sentence increased twelve percent, from 14.52 to 16.23 words per sentence. Group B's average sentence increased eleven percent, from 14.74 to 16.41 words per sentence. Group C's average sentence increased seven percent, from 15.08 to 16.12 words per sentence. And Group D's average sentence increased less than one percent, from 14.97 to 15.09 words per sentence. In other words, for this first category

of writing characteristics, there appears to be a correlation between the amount of collaborative discussion and student improvement. The results indicate a marked difference between Group A, the group that used the collaborative workshop the most, and Group D, which did not use the workshop or any other collaborative format at all.

Other sentence length indicators include the number of "long" and "short" sentences. Grammatik IV allows users to program precisely how many words constitute a "long" and a "short" sentence. For this study, the program's default definitions were retained: a long sentence was more than thirty words, and a short sentence was less than fourteen words. The program highlights these as possible problem sentences, e.g., a "long" sentence may be too wordy or confusing. For the purpose of this study, however, "long" sentences may indicate attempts by developmental writers to explain, give more concrete detail, and, in general, flesh out their writing, while "short" sentences may indicate continuing difficulty in doing so.

In the category of "long" sentences, the changes look large if given as percentages, but the raw numbers were actually quite low. Group A's average number of long sentences increased forty-three and a half percent, from .39 to .56 long sentences per essay. Group B's average number of long sentences decreased twenty-three percent and a half, from .38 to .29 long sentences per essay. Group C's average number of long sentences stayed the same at .54 long sentences per sentence. And Group D's average

long sentences decreased twenty-seven and a half percent, from .69 to .50 long sentences per essay. The results of Groups A and D, then, differed by the greatest amount, but the low results make this category inconclusive.

The results in the category of "short" sentences were larger and showed more substantial difference between Groups A and D than the results in the "long" sentence category. Group A's average number of short sentences decreased thirty-two percent, from 10.67 to 7.28 short sentences per essay. Group B's average number of short sentences decreased seventeen percent, from 6.88 to 5.71 short sentences per essay. Group C's average number of short sentences decreased twenty-four percent, from 7.50 to 5.71 short sentences per essay. And Group D's average number of short sentences decreased eleven percent, from 11.14 to 9.89 short sentences per essay. For this indicator, then, Group A had the greatest amount of positive change, while the control group, D, had the least amount of positive change.

In addition to length, the study checked two other aspects of sentence structure, specifically, coordination and subordination. The ability to subordinate one idea to another is a skill that developmental writers generally lack. Instructors have some success dealing with the issue through grammar lessons and sentence combining exercises. More immediately, collaborative learning about actual pieces of writing deals with the issue of subordination through questions and comments by peer readers such as "What's the point?" and "This part's a little repetitive."

In order to identify these categories of coordination and subordination, or embedded sentences, I defined coordination as coordinators followed by nouns or pronouns followed in turn by verbs and subordination as subordinators followed by nouns or pronouns followed in turn by verbs. This programming allowed Grammatik IV to pick out and count coordinate and subordinate clauses. This method is, of course, subject to error. For example, a dependent clause type of fragment will be flagged as an embedded sentence. Of course, any of the functions of a proofreader or simple spellchecker program is also liable to such error. and so the number of writing characteristics that a proofreader marks inaccurately may even out more or less over the course of a study. However, the methodology in these two particular categories was probably somewhat looser than usual and so may have distorted the results.

In the coordination category, all four groups showed a modest increase in coordination. Group A's average number of coordinate clauses increased eleven and a half percent, from an average of 5.38 to 6.00 per essay. Group B increased fourteen percent, from 3.00 to 3.42 per essay. Group C increased four percent, from 2.96 to 3.08 per essay. And Group D increased ten percent, from 6.08 to 6.69 per essay. Group A and Group D showed similar increases, eleven and a half percent and ten percent, respectively.

In the subordination, or embedded sentence, category, too, the results showed little substantial difference among the groups. Group A's average number of subordinated clauses increased

twenty-three percent, from 7.28 to 8.94. Group B increased twenty-four percent, from 4.00 to 4.96. Group C increased fourteen percent, from 4.50 to 5.13. And Group D increased twenty-two percent, from 6.56 to 8.00. Groups A and D again showed virtually the same positive change, twenty-three and twenty-two percent, respectively. For both of these aspects of sentence structure, then, the results were inconclusive. In future objective-quantitative studies, a more precise means of measuring these categories with a proofreading program will be necessary to show what, if any, correlation there is between collaborative learning and positive change in these areas of sentence structure.

Another group of categories have to do with word usage. Grammatik IV checks for wordiness, redundancy, cliches, and inappropriate usage, or slang. Because the Grammatik IV program will normally flag but not count these problems, I programmed the software myself to include these word characteristics as personalized "count" categories. To do so, I copied the dictionaries that were already in Grammatik IV into new, personalized count categories and renamed them. For instance, Grammatik IV's dictionary called "Cliches" became my personalized count category called "Select Cliches."

The results in these word usage categories were surprising more for their seeming lack of significance than for their significance. That is, the average numbers of usages of slang, wordiness, redundancy, and cliches per essay were minuscule.

First, in the category of slang, the results were as follows: Group A's average number of slang usages per essay went from .11 down to .06 ; Group B's from .17 down to .04; Group C's from 0 up to .04; and Group D's from .06 up to .11. The instances of slang decreased in the two groups that used the workshop most and increased in the two groups that used the workshop least or not at all. However, the results are so small that they are inconclusive. Surely, college students use, on the average, more than one tenth of one slang expression in any given essay. Closer examination of the Grammatik IV program suggests an explanation of the low results. The dictionary for "informal or colloquial" expressions in Grammatik IV, which I simply copied into a new category in order to count the instances of slang, has only sixty-eight expressions, few of which are the type actually used by students. For example, some are a rather literate form of the colloquial--"equally as good as" and "relative to"--while others are silly or old fashioned--"in a jiffy." It seems likely, then, that a larger and more student-appropriate dictionary of slang would be necessary to measure this category accurately.

In the next word usage category, wordiness, the results were as follows: Group A's average number of wordy usages per essay went from .67 down to .22; Group B's from .46 down to .42; Group C's from .67 down to .13; and Group D's from .78 down to .56. These figures show that the group that used the workshop most showed a larger positive change in wordiness than the group that did not use the workshop at all, but, again, the results are too

low to be conclusive.

Furthermore, in two categories of writing characteristics, redundancy and cliches, the group that used the workshop most actually increased the average number of these problem usages. Specifically, in the category of redundancy, Group A's average number of redundancies per essay went from .11 up to .17; Group B's from .21 down to .04; Group C's from .13 down to .08; and Group D's from .11 down to .08. And in the category of cliches, Group A's average number of cliches per essay went from .78 up to 1.27; Group B's from .29 down to .21; Group C's from .42 down to 0; and Group D's from .06 up to .17.

The cliche category results, in particular, invite speculative response. First, like the slang dictionary, there is the likelihood that Grammatik IV's cliche dictionary simply misses some number of actual student cliches. For example, how many developmental students use cliches like "ample opportunity," "auspicious occasion," or "belabor the point"? Second, the numbers on cliches for Group A are the most substantial of all groups in the word categories. If the hypothesis that the results in this category are not anomalous to the previous indications of improvement for Group A is accepted, then it might be interesting to consider how an increase in the use of cliches demonstrates an improvement in the writing of developmental students. In this regard, I posit the explanation of three stages of cliche, and possibly diction, competence--the pre-clicheic, the clicheic, and the post-clicheic.

In the pre-clicheic stage, writers either do not know cliches at all or, if they do have some idea of them, mangle them in some way, so that what begins as a cliche becomes instead a malaprop or just unrecognizable nonsense. In terms of the methodology of this study, such occurrences would present a particular difficulty because a limitation of Grammatik IV or any proofreader program is that, because it relies on the exact version in its memory, it will not flag an incorrect version of a cliche or any other problem. In either case, and this is a distinct possibility for developmental students, if a writer does not know a cliche well enough to use it correctly, his or her piece of writing will reflect few if any of the cliches that Grammatik IV identifies.

In the second, or clicheic, stage of cliche competence, the writer knows cliches well enough to use them accurately. Such writing is often not incorrect but lifeless--the writer has not yet found his or her own voice. However, assuming that the program included the actual cliches appropriate to the world of that writer, a proofreader would catch the cliches.

In the last, or post-clicheic stage of cliche competence, the writer not only knows cliches, he or she knows that their use limits, rather than enhances, expression, and so tries to avoid using them or tries to rework them into a more personal version.

In this taxonomy of clicheic competence, then, the developmental writer falls into the first, or pre-clicheic, stage. Therefore, at the risk of seeming casuistic, I would like

to suggest that an increase in the use of cliches might indicate an improvement in the sense that the writer is learning, in this case through collaborative discussion, the correct versions of cliches and so expanding his or her vocabulary and even enriching his or her sense of imagery. For example, few developmental students know the correct version of the cliche, "a tough row to hoe," but once they do, that cliche makes new metaphorical sense and invites the invention of original metaphors. So the clicheic taxonomy outlined here is really simpler than it may seem at first. Developmental students may need to learn and be able to use cliches before they can move through them to thoughtful word choices and imagery of their own.

Another category that deals with developing a sense of individuality in one's writing is the use of the passive voice. While most writing instructors lecture on the differences between the active and passive voices, the immediacy of collaborative learning discussions encourages students to make agency direct and clear in every sentence. In this study, the results in this category were as follows. Group A's average use of the passive voice decreased thirty-six and a half percent, from 1.67 to 1.06 usages per essay. Group B's average use of the passive voice decreased seventy and one half percent, from 1.29 to .38 usages per essay. Group C's average use of the passive voice decreased sixty-three percent, from 1.92 to .71 usages per essay. And Group D's average use of the passive voice decreased eight percent, from 1.56 to 1.44 usages per essay. While the results of Groups

A, B, and C vary substantially, their decreases in the use of the passive voice are all many times greater than the decrease in the control group. This difference indicates a positive effect of collaborative learning on this particular writing characteristic.

Another characteristic related to the use of the passive voice is the use of the verb "to be." This characteristic ties in also with the emphasis that collaborative learning places on "fleshing out" writing by measuring, inversely, the writer's use of substantive verbs. In the category of the use of the verb "to be," the results were as follows. Group A's average use of the verb "to be" decreased ninety and a half percent, from 3.50 to .33 usages per essay. Group B's average use of the verb "to be" decreased twenty-eight percent, from 2.50 to 1.79 usages per essay. Group C's average use of the verb "to be" decreased twenty-seven percent, from 3.04 to 2.21. And Group D's average use of the verb "to be" decreased three percent, from 4.17 to 4.06. Here, again, the three groups that used the workshop showed rates of positive change many times greater than the group that did not use the workshop.

The final category, problems detected, is one that takes in everything that Grammatik IV measures--grammar, usage, punctuation, spelling, and mechanics. Collaborative learning can, but often does not, aim at dealing with some of these areas. For example, most collaborative sessions are guided by the large to small, or fluidity before correctness, approach to writing, which emphasizes the importance of matters of organization,

development, and clarity at the expense of matters of mechanics and spelling. Therefore, I expected that there might not be a very substantial difference in this overall category. The results in this category were as follows. Group A's average number of problems detected decreased sixty-four percent, from 11.17 to 4.06 problems per essay. Group B's average number of problems decreased seventy-three and a half percent, from 7.25 to 1.92. Group C's average number of problems detected decreased sixty-nine percent, from 8.08 to 2.50. And Group D's average number of problems detected decreased forty-three percent, from 10.58 to 6.00. The difference between Group A and Group D--twenty-one percent--was surprisingly large, indicating that collaborative learning may help developmental students in all areas of their writing.

What, then, do the results of this study mean in terms of the objective-quantitative evaluation of the effects of collaborative learning on developmental writing students? First, the results appear to indicate that collaborative learning has greater impact on some areas of developmental writing than on others. The greatest impact was in the areas of sentence length, the use of the passive voice, the use of the verb "to be," and overall number of problems. There appears to be less impact in the areas of coordination and subordination. And the impact in the word usage areas--slang, wordiness, redundancies, and cliches--is inconclusive.

A second conclusion stemming from this study is that work

needs to be done to make Grammatik IV or any other proofreader used in objective-quantitative studies both more responsive to the kinds of words and phrases that developmental students actually use and better able to locate students' incorrect variations of those words and phrases.

A third, and perhaps the most interesting, conclusion stemming from this study is really an implication more than a conclusion. Specifically, the study suggests in an objective-quantitative manner the validity of the conventional subjective attitude among developmental instructors that developmental students are not necessarily inferior in any intrinsic way. That is, the study appears to indicate that there may be a pre-clicheic stage in the developmental writer's ability to master and then to transcend the use of cliches. If such stages of cliche usage apply as well to all writers, not just developmental writers, then all writers must be, at some point in their education, in a developmental stage in their writing ability. Therefore, for whatever reasons--insufficient early training, interests in other areas, absence from college for an extended period of time--the developmental student is simply beginning this particular stage of the writing process at a later date than some other students.

The fourth and last conclusion is that this study appears to indicate that, overall, collaborative learning does have a positive effect on the writing skills of developmental students. This study is, however, only a pilot project. Much work remains to be done even to begin in earnest the objective-quantitative

assessment of the effectiveness of collaborative learning in the teaching of writing.

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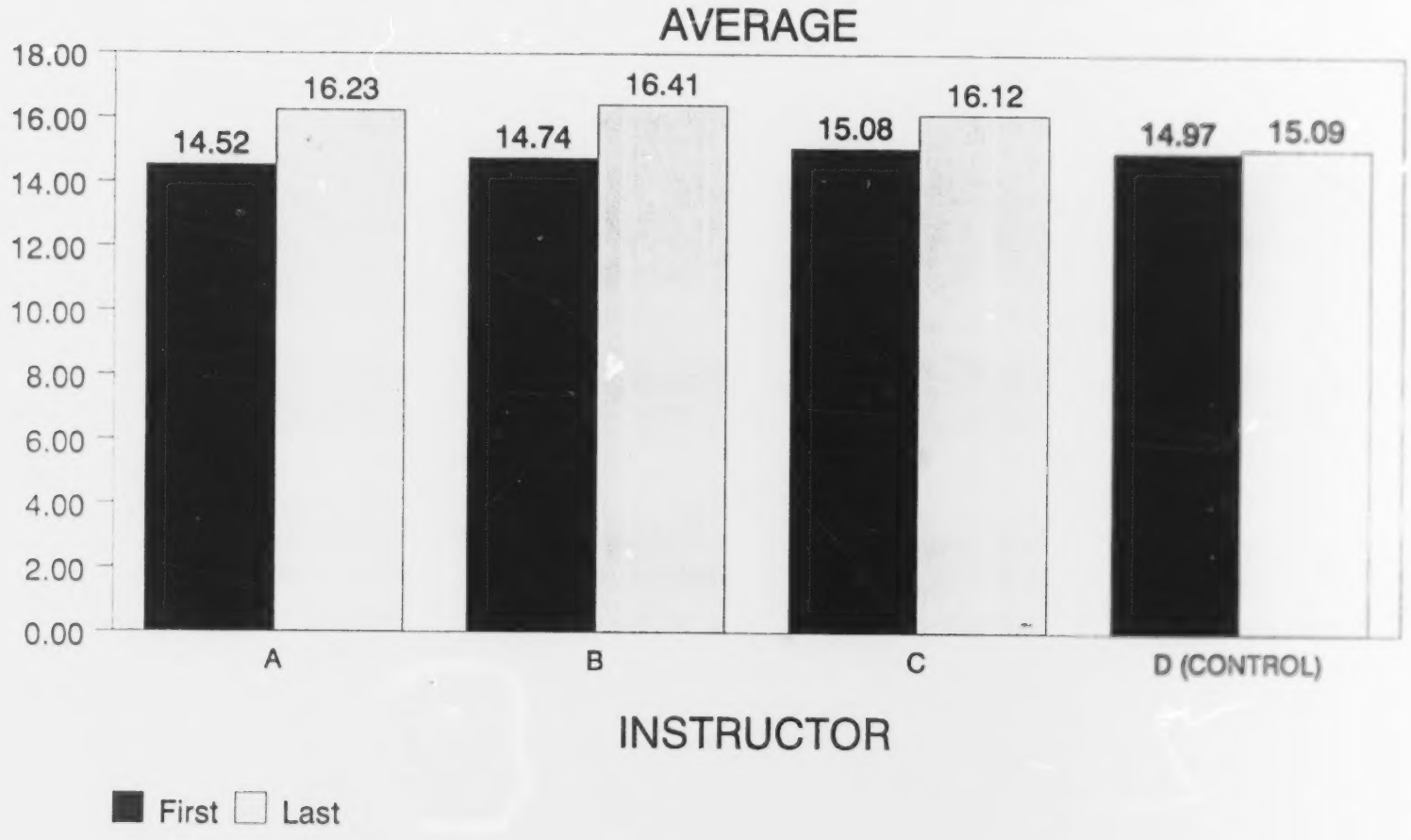
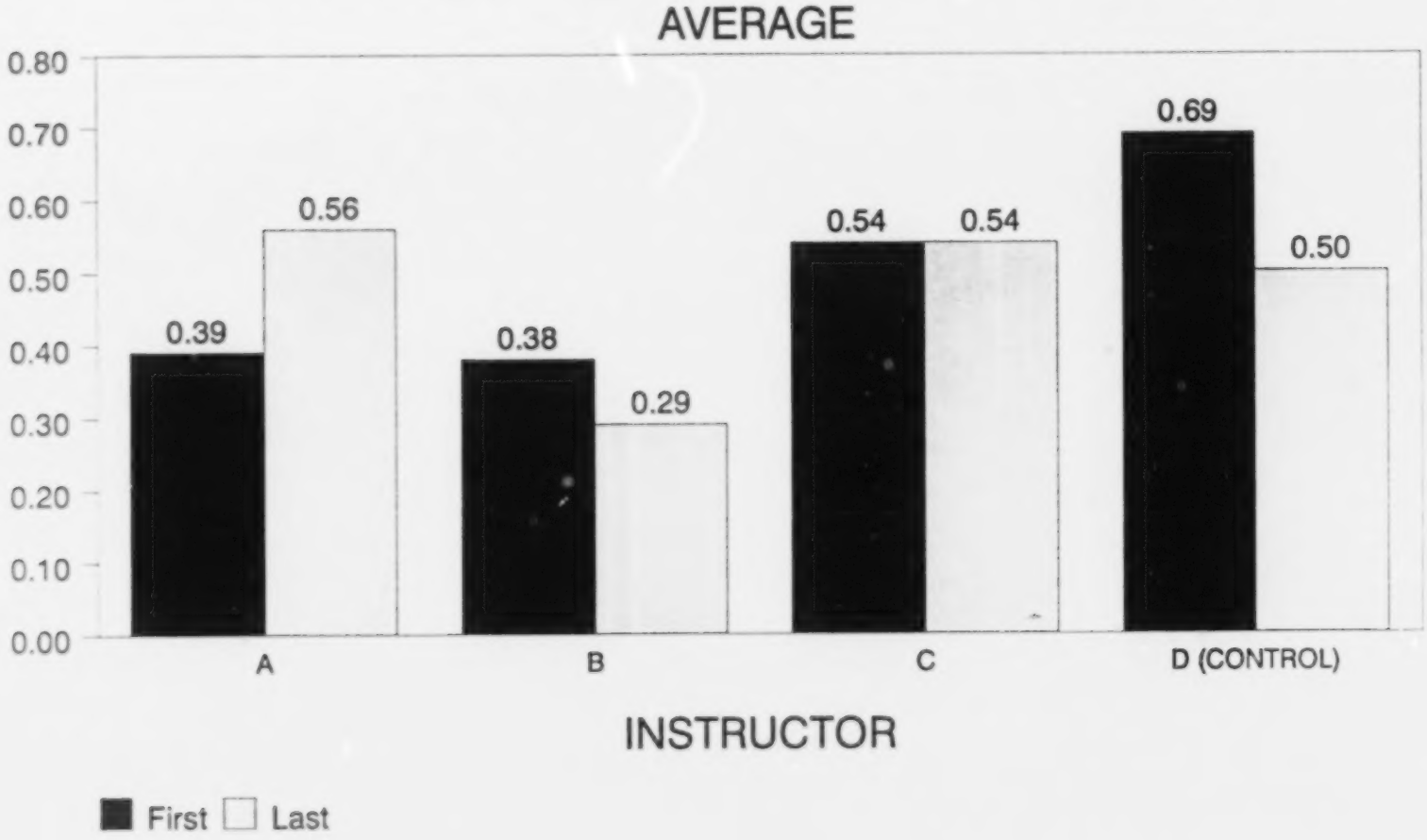


LONG SENTENCES (>30 WORDS)



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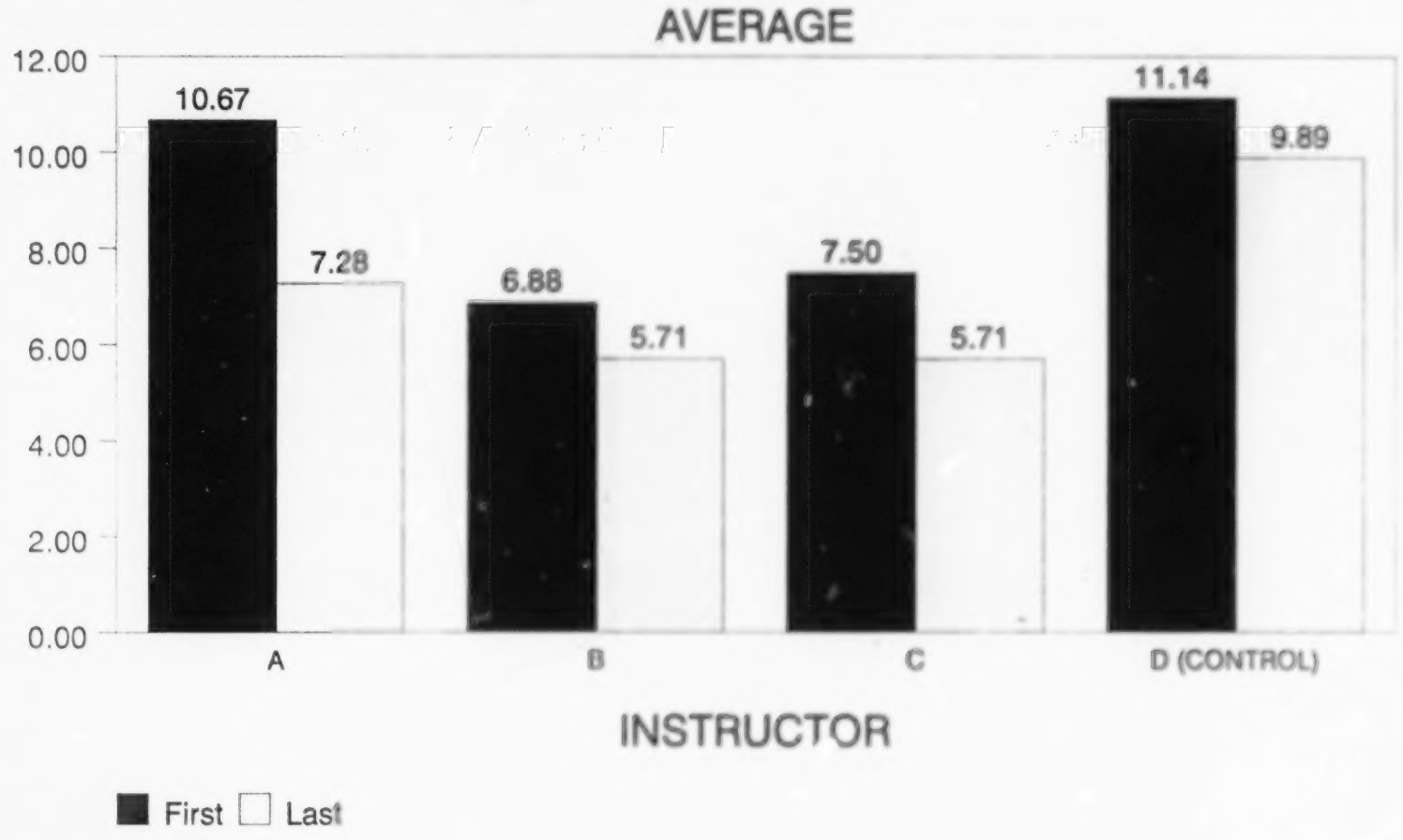

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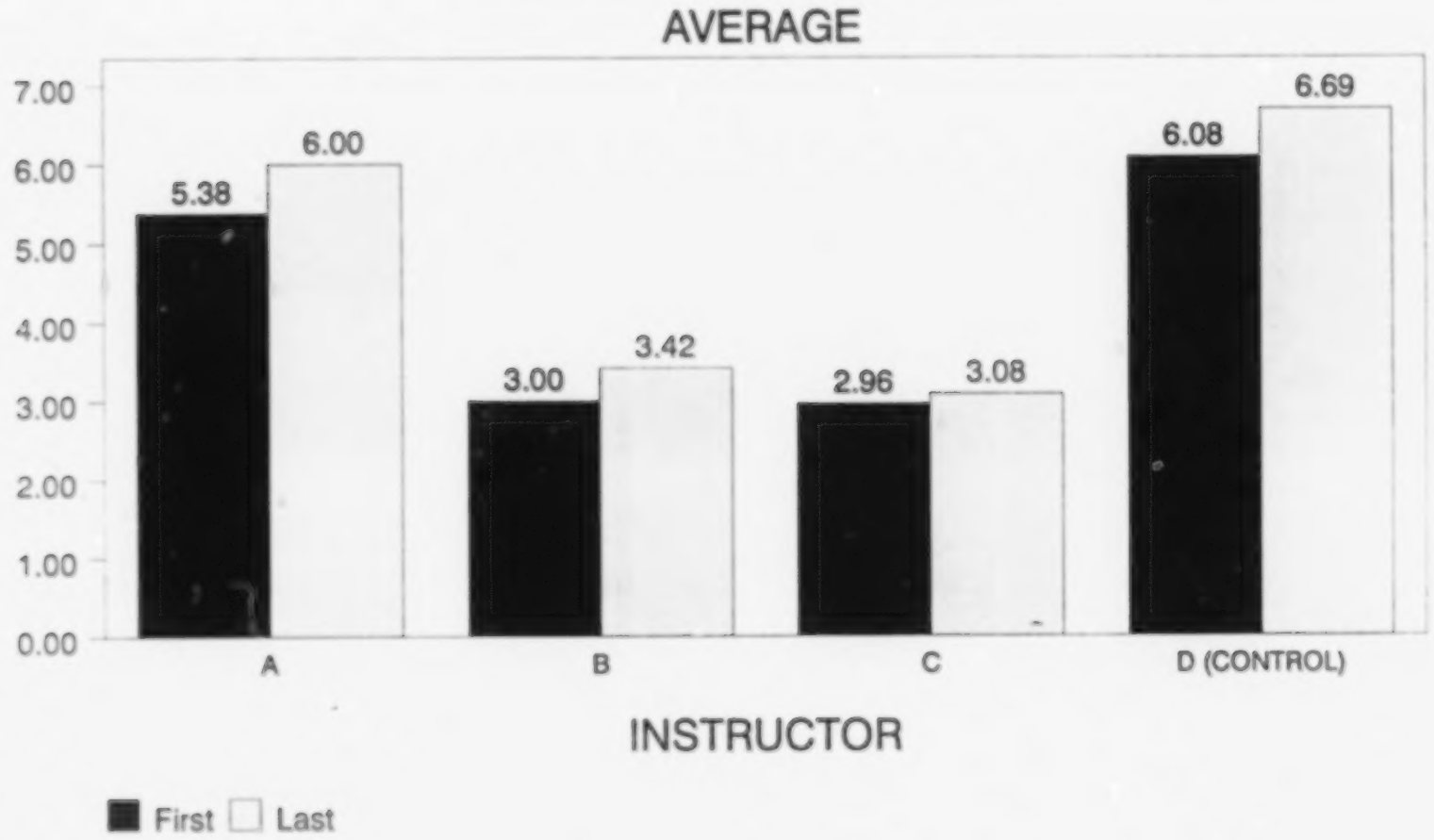

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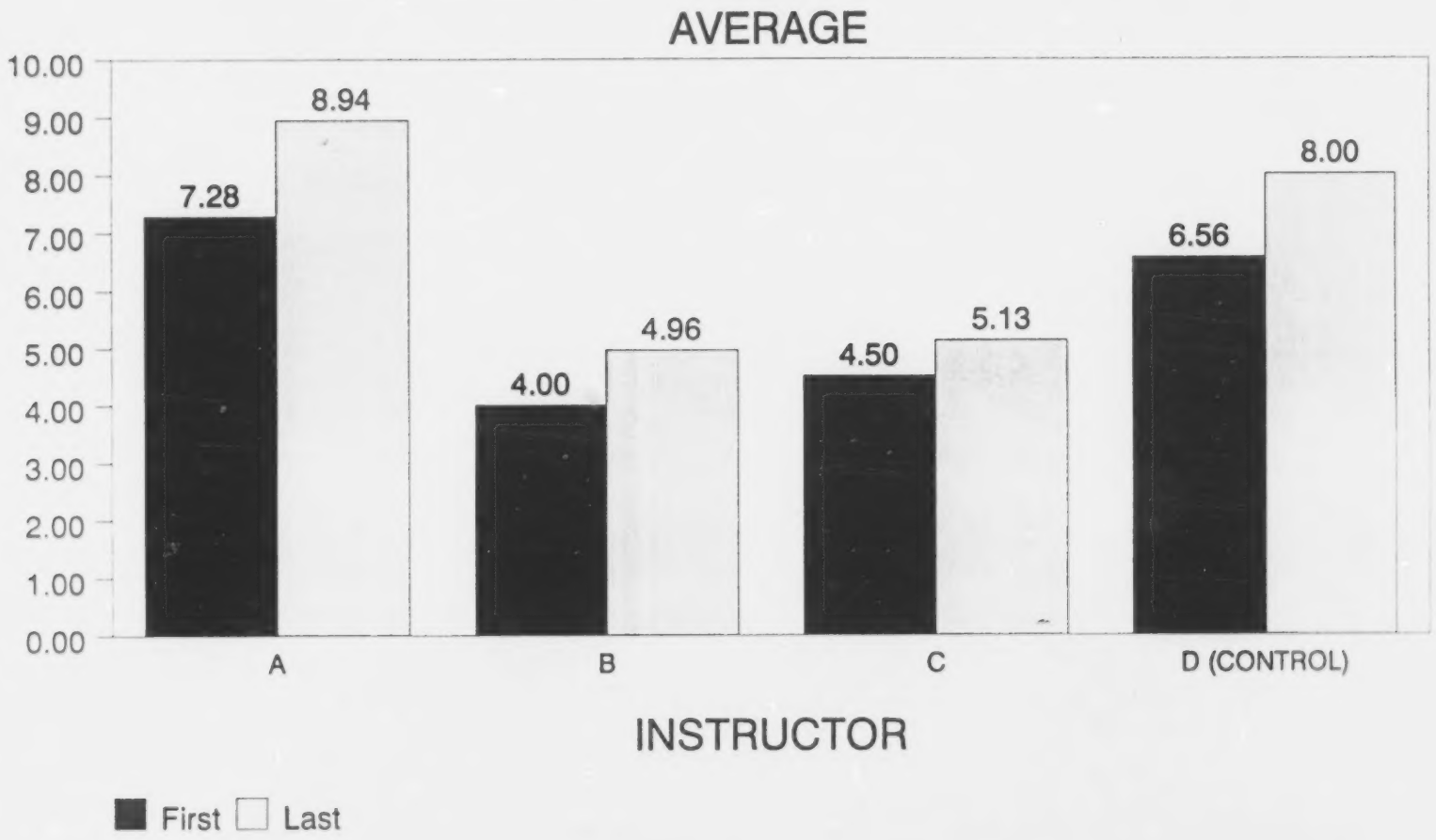
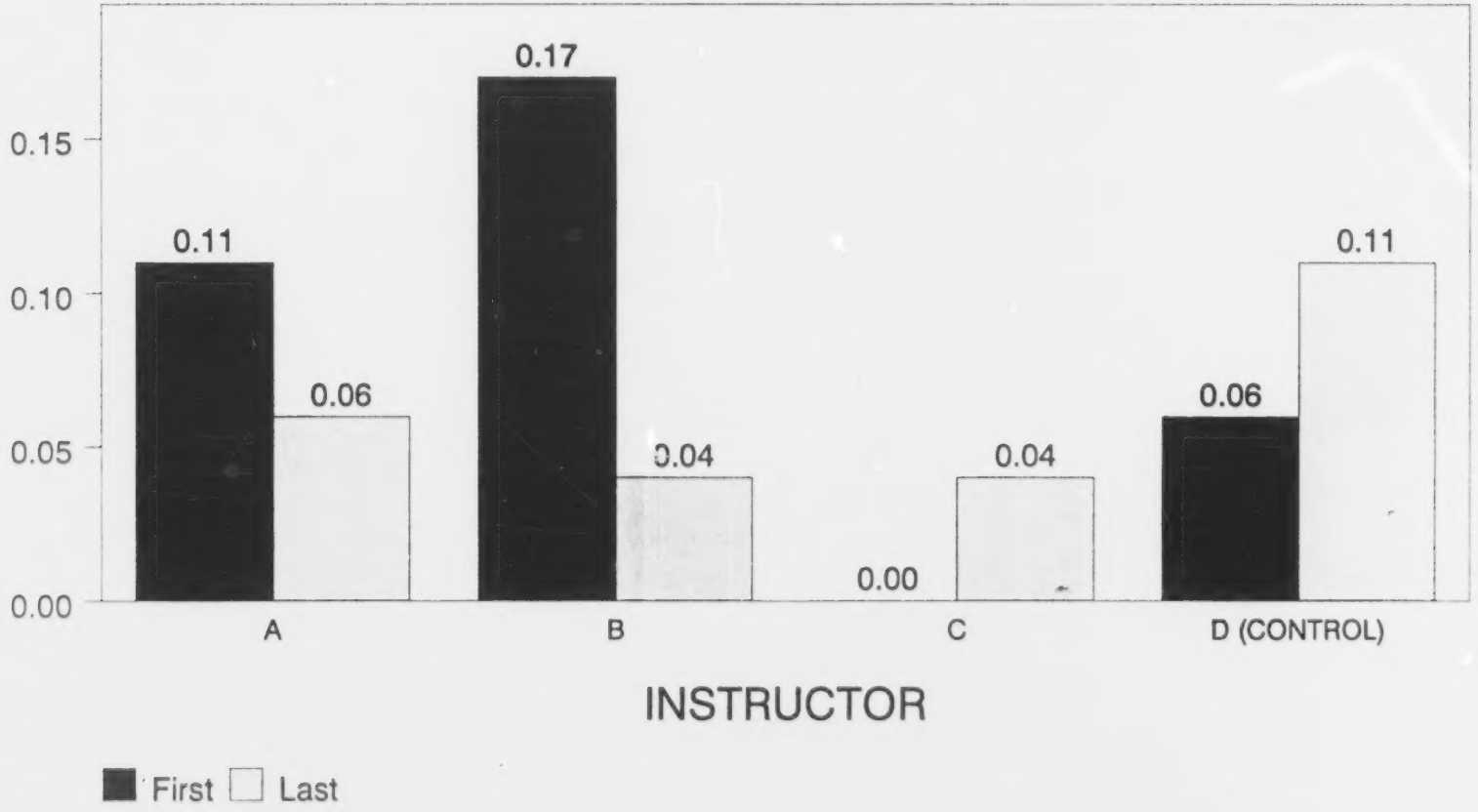


SLANG

AVERAGE



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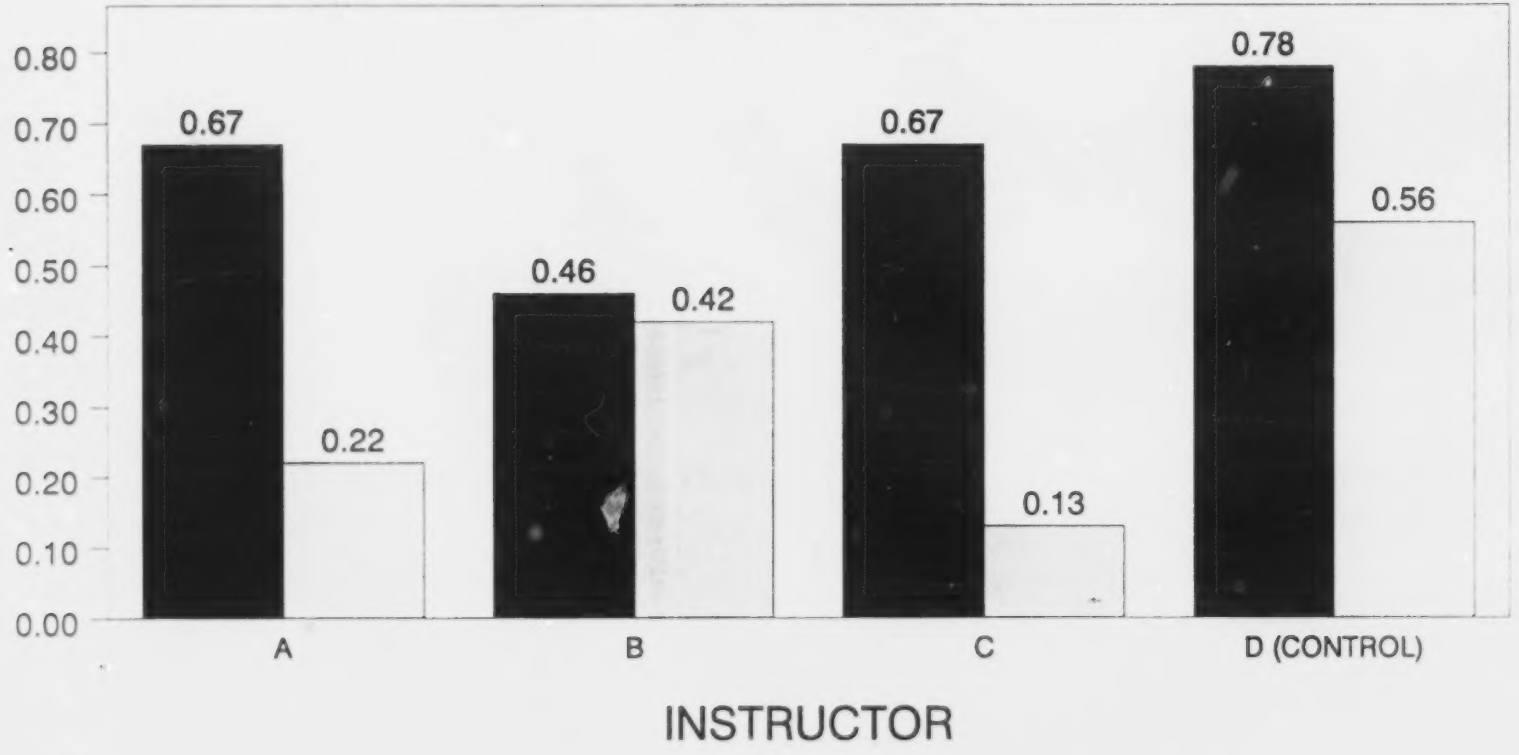

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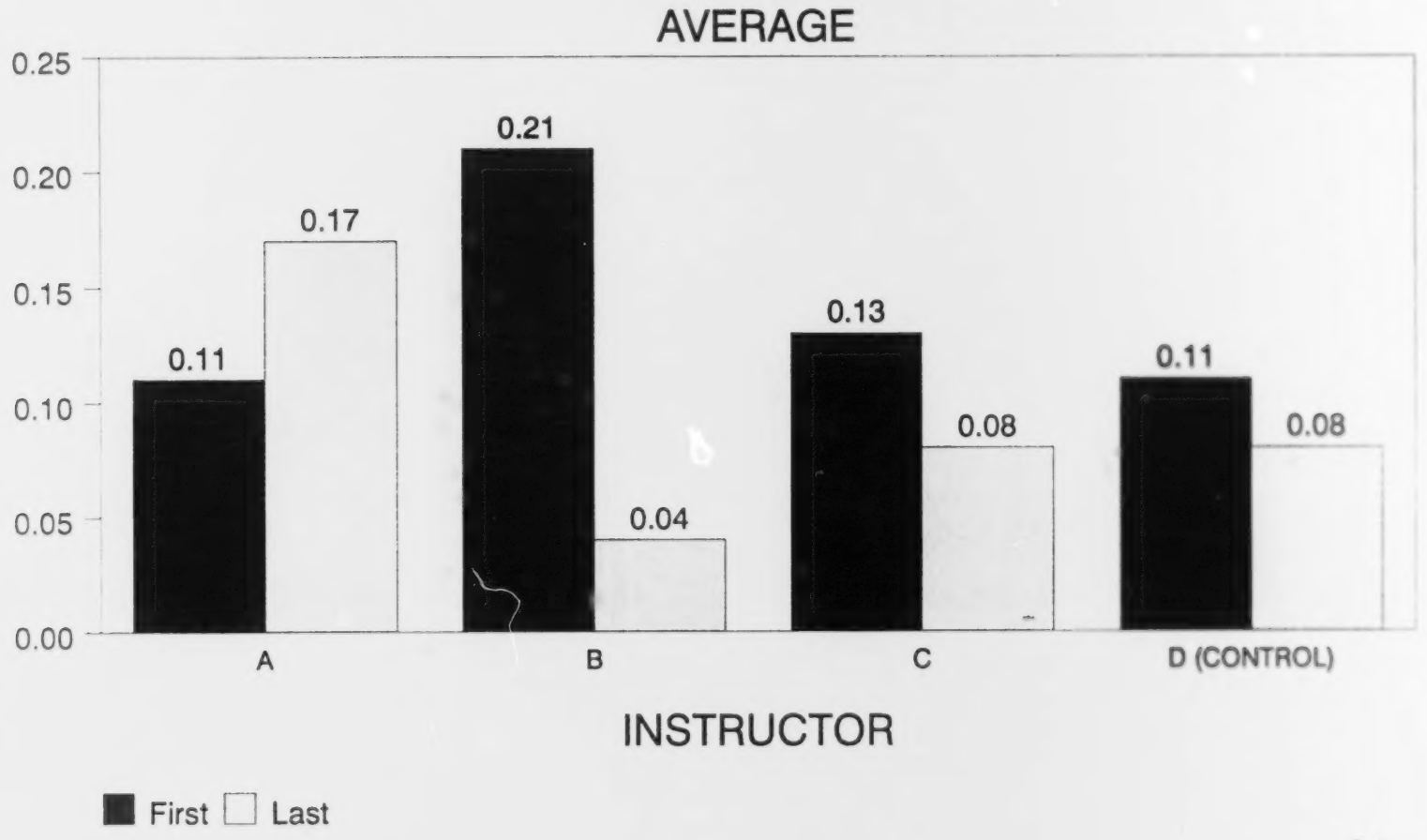

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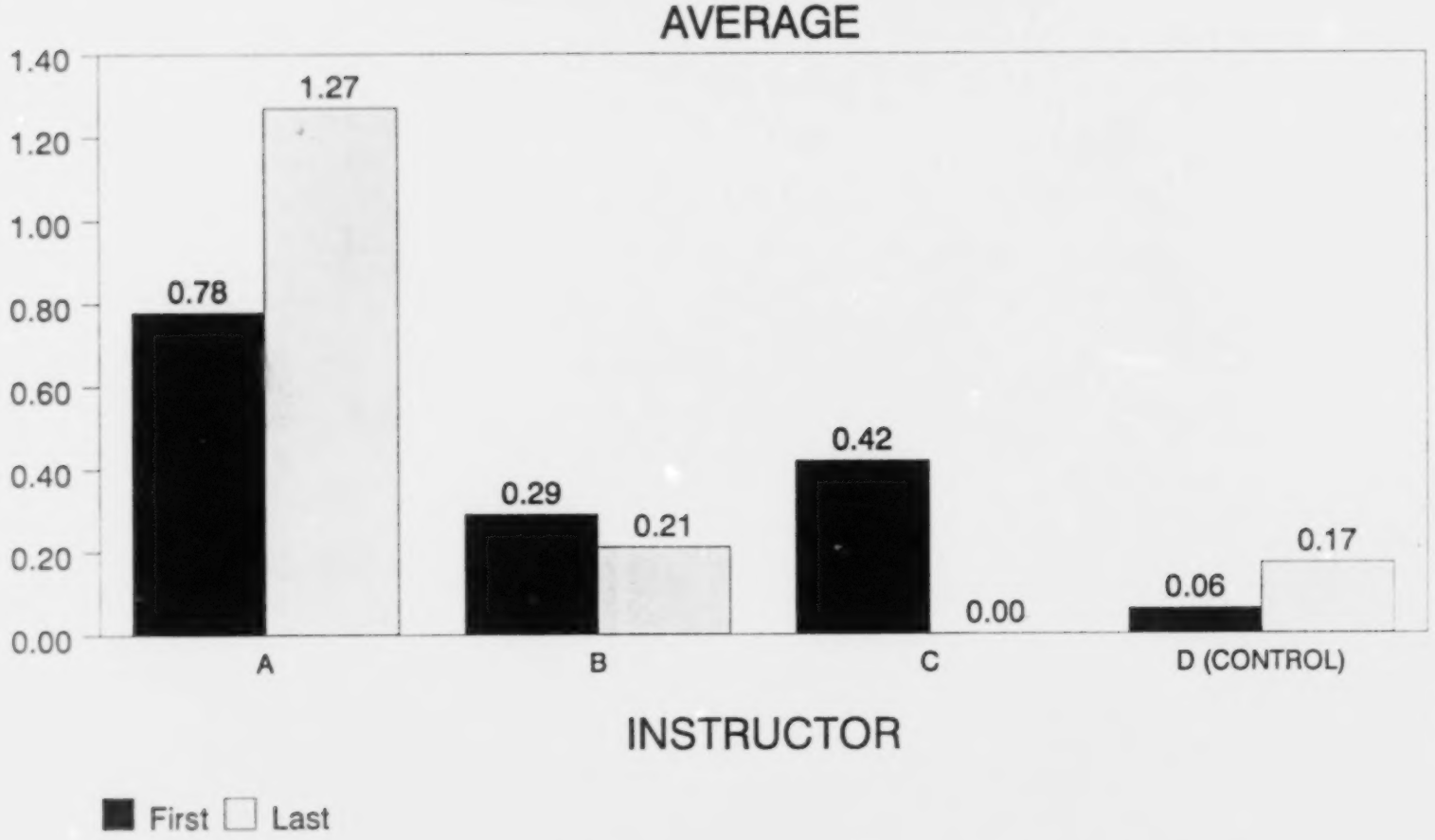

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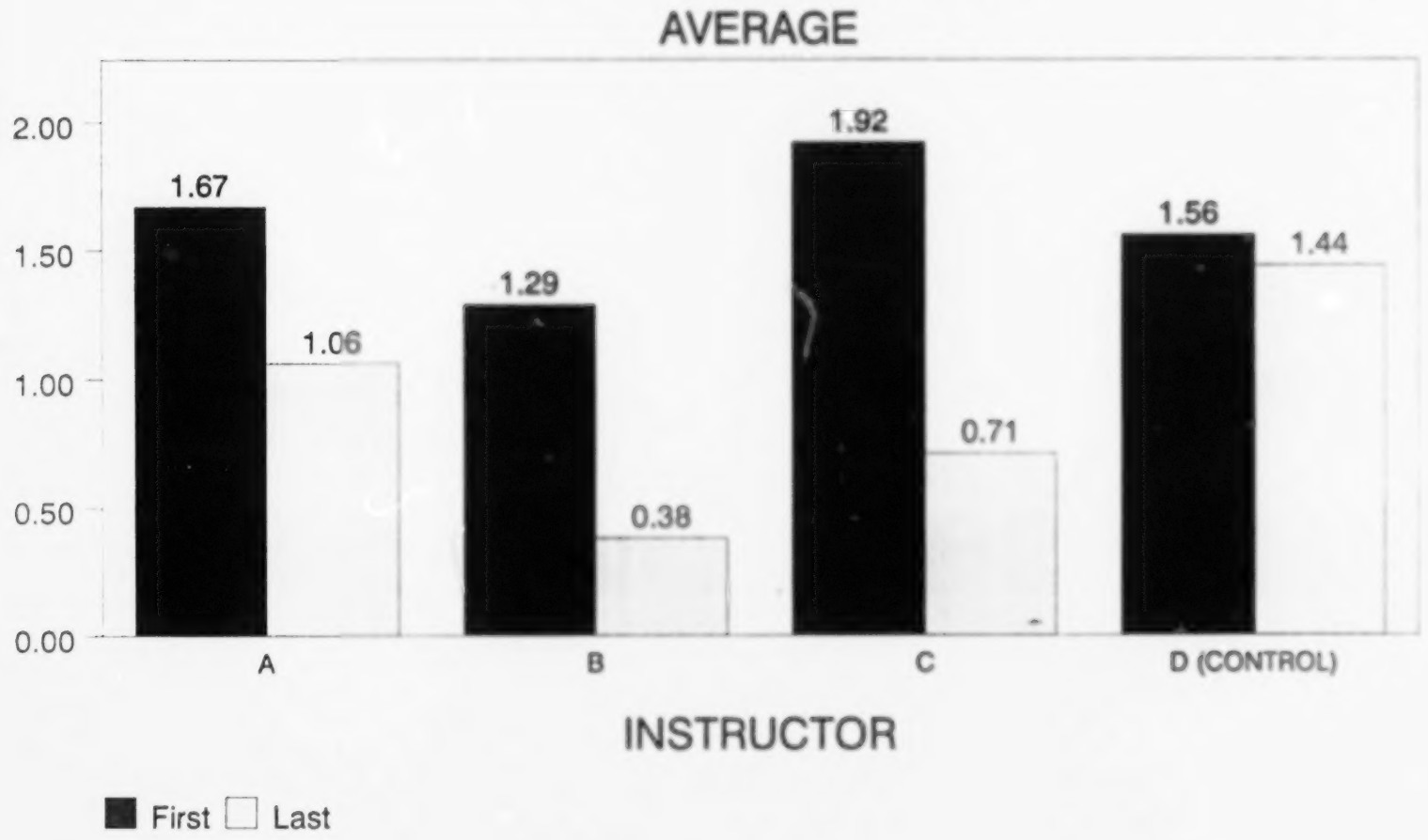
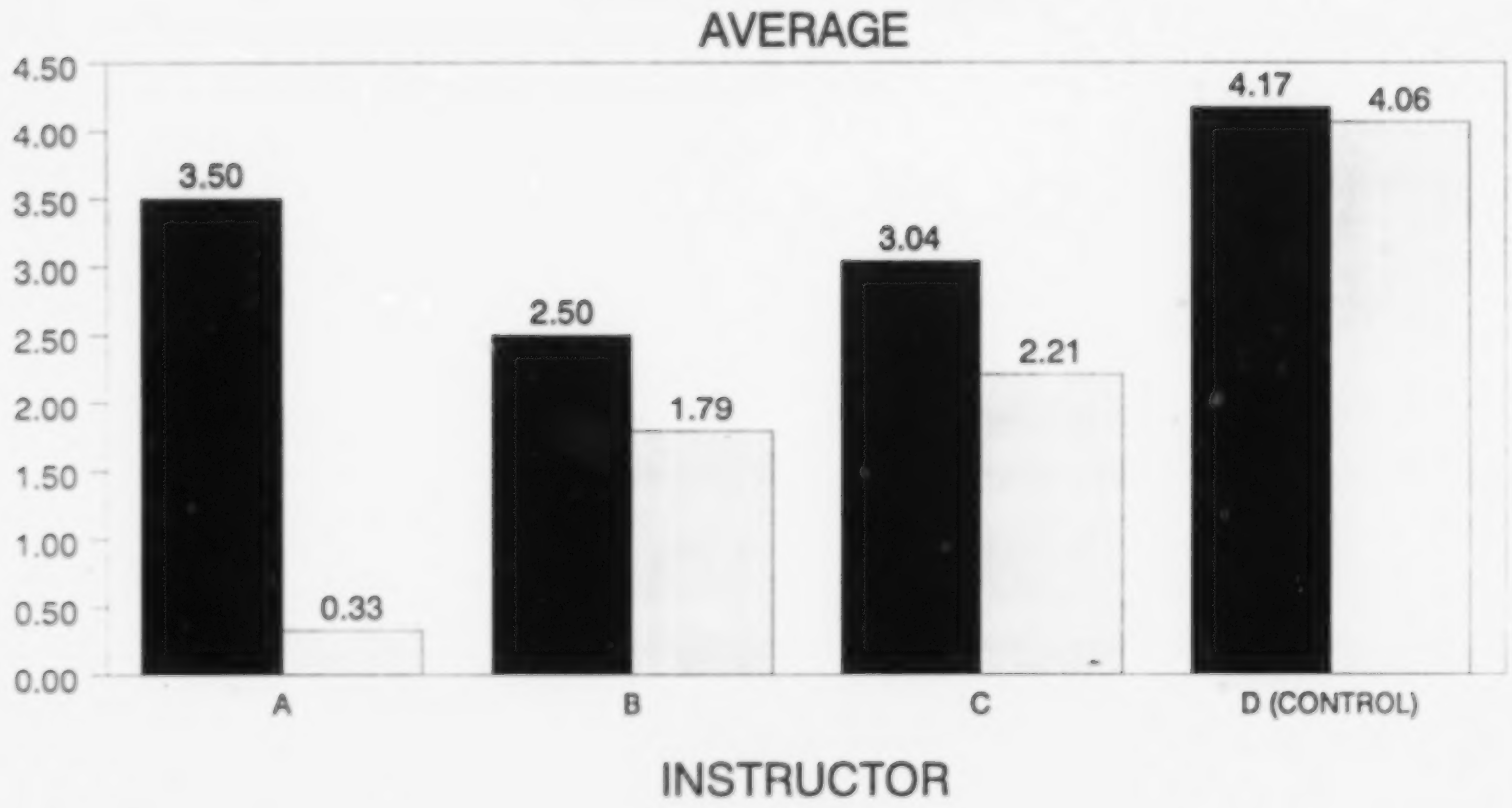


VERB TO BE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D (CONTROL)
INSTRUCTOR
First
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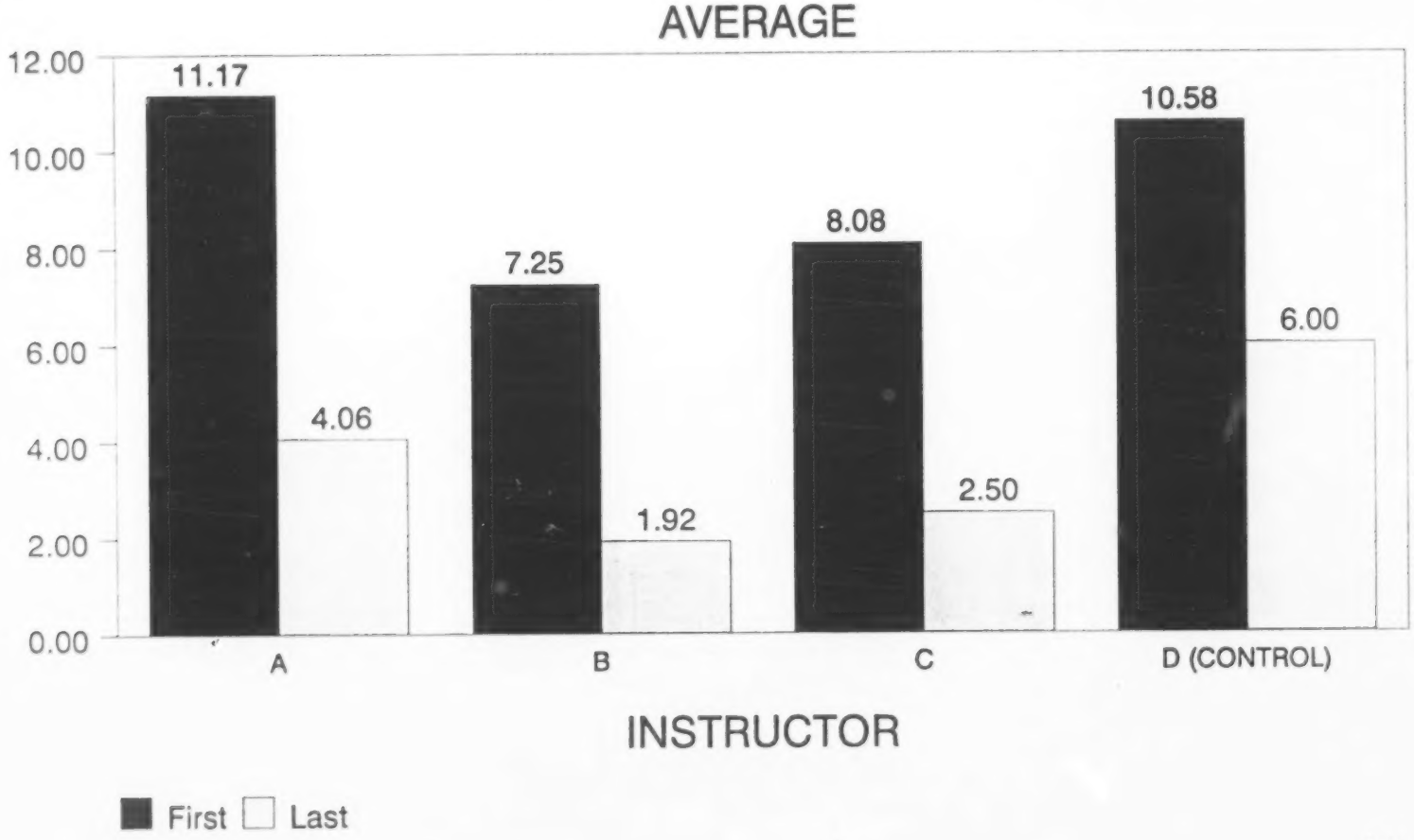
PROBLEMS DETECTED



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